POLICY RESEARCH WORKING PAPER 3126

Public Disclosure of Environmental Violations in the Republic of Korea

Jong Ho Hong
Benoît Laplante
Craig Meisner

The World Bank
Development Research Group
Infrastructure and Environment
August 2003

POLICY RESEARCH WORKING PAPER 3126

Abstract

Since 1989, environmental authorities of the Republic of Korea have published on a monthly basis a list of enterprises violating the country's environmental rules and regulations. This may be the longest environmental public disclosure program currently in existence. Over the period 1993–2001 in excess of 7,000 violations have been recorded in these monthly violation lists, involving more than 3,400 different companies. In this paper, Hong, Laplante, and Meisner provide a comprehensive descriptive analysis of this dataset. Results suggest that the news media have given an important, though perhaps declining coverage, to the violation lists, with a focus on publicly traded companies, failures to operate pollution abatement equipment, and prosecutions.

This paper—a product of Infrastructure and Environment, Development Research Group—is part of a larger effort in the group to analyze the role of public disclosure as an environmental policy tool. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Yasmin D'Souza, room MC2-622, telephone 202-473-1449, fax 202-522-3230, email address ydsouza@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. Craig Meisner may be contacted at cmeisner@worldbank.org. August 2003. (20 pages)

PUBLIC DISCLOSURE OF ENVIRONMENTAL VIOLATIONS IN THE REPUBLIC OF KOREA*

JONG HO HONG
College of Economics and Finance, Hanyang University, Seoul, Korea

BENOIT LAPLANTE
Independent Consultant, Montréal, Canada

CRAIG MEISNER
Development Research Group, Infrastructure and Environment, World Bank, Washington, DC, USA

Key words – Korea, environmental violations, public disclosure.

* We would like to express our sincere thanks to Mr. Jongsoo Yoon, General Director of Public Affairs at the Ministry of Environment, Korea, for helping us to collect the necessary company violations data to carry out our research. We also would like to thank Il Hwan Ahn, Dae Hee Kim, Jeong Kyu Yoon at the graduate school of Hanyang University for their expert research assistance.
Correspondence should be addressed to: Craig Meisner, MC2-205, World Bank, 1818 H Street, NW, Washington, DC 20433, cmeisner@worldbank.org.

I. INTRODUCTION

IT has long been recognized that the implementation of environmental laws, regulations, and standards has suffered from a lack of resources to undertake appropriate monitoring activities, and reluctance to use stringent enforcement actions toward those recalcitrant polluters. In view of those difficulties, an increasing number of environmental regulators around the world have sought to complement or supplement traditional enforcement actions (fines and penalties) with the adoption of structured information programs (or public disclosure programs) by which the environmental performance of industrial facilities is revealed. Programs such as the Toxics Release Inventory (TRI) in the United States (also implemented in Canada and Great Britain), or the Proper Prokasih program in Indonesia and the EcoWatch program in the Philippines are examples of structured information programs that rely on non-regulatory forces to create incentives for (mainly industrial) facilities to improve environmental performance.[1]

While this may not be as well-known, South Korea (henceforth Korea) has developed its own extensive experience with the public disclosure of environmental performance of regulated facilities. Since 1989, Korea has published on a monthly basis a list of facilities in violation with existing Korean environmental laws and regulations. Over the period 1993 to 2001, more than 7,000 *violations* have been reported on those lists, involving in excess of 3,400 facilities. As such, the Korean experience with a

[1] See Foulon, Lanoie, and Laplante (2002), Lanoie, Laplante, and Roy (1998), and World Bank (2000) for a description of such programs.

structured public disclosure program may very well be one of the most extensive experiences of this nature in the world.[2]

In the next section, the history of the public disclosure program in Korea is briefly described. In Section III, we provide a detailed description of the events that have appeared on the Korean monthly violation lists. Section IV briefly concludes.

II. HISTORY OF THE KOREAN PUBLIC DISCLOSURE PROGRAM

Over the past 40 years, Korea has risen out of the depths of poverty as it has embarked on aggressive economic development. Throughout the 60's and 70's, the Korean government has adopted a series of growth-oriented economic policies including establishing industrial complexes and promoting heavy and chemical industries. Over the period 1960 to 1980, per capita income increased from 380 USD to 2,740 USD. It continued to increase to reach 6,160 USD in 1990 (Song, 1997). Over the same period of time, industry increased its share of overall economic activity from approximately 12% to more than 30%. This was accompanied with a rapid rate of urbanization from 28% in 1960 to more than 70% by the mid 1980's.

This rapid industrialization, urbanization, and mass production gave rise to environmental degradation on an unprecedented scale with ambient air and water quality standards being repeatedly violated. Until the early 80's however, the Korean government did not place a high priority on environmental conservation policy. Environmental problems, which were already becoming prevalent in many parts of

[2] While it covers a larger number of years and facilities, the US TRI does not, by its very nature, focus on facilities in *violation* of existing laws and regulations.

Korea, were still something the government did not want to talk about, not to mention to act upon.

Things have changed since then. Twenty years of economic growth has slowly allowed Korean people to understand the importance of quality of life such as better environmental quality. In 1980, the Environment Administration was established by expanding and reorganizing the Environmental Affairs Bureau within the Ministry of Health and Social Affairs (Ministry of Environment, 2002). Furthermore, the revised Constitution proclaimed environmental rights as a basic human right in 1980. In recent years, Korean people have repeatedly expressed the opinion that a clean environment is as important as economic development and that it will contribute to long-term economic development. They have also expressed the opinion that individuals and citizens' groups have a large role to play on matters of environmental protection.

In the course of the rapid economic expansion of the 60's and 70's, the Government expressed a reluctance to strictly enforce environmental regulations toward companies at that time, worrying that they might damage companies' economic performance and competitiveness. As a result, the Environment Administration started to resort to publishing the names of companies that did not comply with then Korean environmental laws. It is in this context that the Monthly Violations Report (MVR) was first published in 1989 by the Environment Administration as news material distributed to media reporters. The government's rationale behind the disclosure of the MVR was to provide disincentives for companies not to practice illegal polluting activities without necessarily resorting to legal fines and penalties. The MVR then described a list of facilities in violation with existing Korean environmental laws and regulations. The

violations included emission standard violation, and failure of pollution abatement equipment among others. Given the then limited monitoring capacity in terms both of financial and human resources, the MVR had a very limited coverage.

In 1990, the Environment Administration was upgraded to the cabinet level as the Ministry of the Environment, thereby being able to take greater charge over environmental policies and affairs within the government. Again in 1994, local water supply / sewage systems and potable water management, which had been previously the responsibility respectively of the Ministry of Construction and Transportation and the Ministry of Health and Social Affairs, were integrated under the control of the Ministry of Environment. In the same year, the Ministry of Environment was granted greater authority following a major structural overhaul in the Korean government (Ministry of Environment, 2002).

The MVR disclosure program has continued throughout the 1990s under the Ministry of the Environment. Under the Ministry, the program has enlarged considerably in terms of human and financial resources. A typical MVR in this period includes monthly government inspections on about 10,000 air and water polluting facilities, using a total of approximately 15,000 man-days from local governments and Regional Environmental Offices. Since November 2000, the Reports are also disclosed through the Ministry of Environment official website, which certainly make the environmental information much more accessible to the general public.

Not all enterprises are subject to the MVR. The Ministry of Environment classifies emitting facilities into 5 categories as shown in Table I. Even though the

Ministry does inspect all facilities from Categories 1 to 5, it discloses company names which belong to Categories 1 to 3 only, even though most facilities belong to Categories 4 and 5. This may be explained by the belief that a public disclosure program may be more effective if targeting larger facilities.

TABLE I
MINISTRY OF ENVIRONMENT'S CLASSIFICATION OF EMITTING FACILITIES

	Air pollution Facilities with annual fuel use of (coal converted):	Water pollution Facilities with wastewater discharge of:
Category 1	Over 10,000 tons	Over 2,000 m^3 per day
Category 2	Between 2,000 and 10,000 tons	Between 700 and 2,000 m^3 per day
Category 3	Between 1,000 and 2,000 tons	Between 200 and 700 m^3 per day
Category 4	Between 200 and 1,000 tons	Between 50 and 200 m^3 per day
Category 5	Less than 200 tons	Less than 50 m^3 per day

While similar in spirit to the U.S. EPA's Toxics Release Inventory (TRI), the Korean MVR differs significantly from the TRI in that it reports the names of companies that are actually in violation of Korean environmental laws, as well as the nature of enforcement actions undertaken by the Ministry. The TRI is limited to reporting quantities of toxic wastes produced, imported or processed by a set of facilities. To this extent, the Korean MVR is considerably more akin to the lists published since July 1990 by the Ministry of Environment, Lands and Parks of British Columbia (Canada) which aims to publicize the name of firms that either do not comply with the existing regulation or whose environmental performance is of concern to the MOE.[3]

In the next section, we provide a comprehensive description of the violation events published by the Ministry over the period 1993-2002.[4]

[3] See Lanoie, Laplante, and Roy (1998) and Foulon, Lanoie, Laplante (2002) for more detail. For information on other public disclosure programs, see World Bank (2000).
[4] The Korean regulation pertaining to the length of time that information must be stored is such that all records previous to 1993 are no longer available.

III. DESCRIPTION OF VIOLATION EVENTS

A. *Overall description*

Over the period 1993-2002,[5] a total of 7,073 violation events appeared on a total of 113 violation lists published on a monthly basis. As indicated in Table II, the number of reported events remains relatively constant over that period of time at around 800.

TABLE II
NUMBER OF REPORTED VIOLATION EVENTS

Year	Number of reported events	Number of Facilities
1992 (December only)	40	40
1993	888	876
1994	654	646
1995	533	529
1996	895	888
1997	838	824
1998	681	675
1999	779	767
2000	805	795
2001	755	733
2002 (January to April)	205	203
Total	7,073	6,976

Over this period of observation, a total of 3,455 different facilities have appeared on the monthly violation lists, some more than once (hence the number 6,976 in Table II). The number of events and facilities indicate that on average, over the entire period of time, each facility appeared 2.5 times on the violation lists. However, as shown in Table

[5] While we shall refer to the period 1993-2002, it should be understood that this dataset includes data for the month of December 1992, and covers only the period of January to April 2002. A complete dataset for the year 2002 was not yet available at the time the data used in this paper was collected.

III, 1,981 facilities (57%) appeared only once on the lists over that period of time, while a number of facilities appeared a much larger number of times: 253 facilities appeared between 5 and 10 times, 4 facilities appeared more than 15 times, and 1 facility, the Daesan company, even appeared a total of 43 times on the violation lists.

Table III
NUMBER OF FACILITIES PER NUMBER OF REPORTED VIOLATION EVENTS

Number of reported events	Number of facilities
1	1,981
2	661
3	356
4	176
5	95
6	57
7	41
8	29
9	19
10	12
11	9
12	6
13	3
14	5
15	1
Greater than 15	4
Total	3,455

B. *Sectors*

Given the nature of the monthly violation lists, it may be expected that a large percentage of events would involve facilities in the manufacturing sector. As indicated in Table IV, indeed approximately 85% of the events do involve the manufacturing sector.

TABLE IV

NUMBER OF VIOLATION EVENTS PER SECTOR OF ECONOMIC ACTIVITY

Sector of activity	Number of events	%
Manufacturing	5,990	84.68
Other Community, Repair & Personal Service activities	347	4.91
Agriculture, Fishing & Forestry	130	1.84
Construction	113	1.60
Real, Estate & Renting & Leasing	68	0.96
Mining	67	0.95
Electricity, Gas & Water supply	42	0.59
Wholesale & Retail	38	0.54
Health & Social work	34	0.48
Transport, Post & Telecommunications	24	0.34
Hotels & Restaurants	15	0.21
Education	7	0.10
Business activities	5	0.07
Recreational, Cultural & Sporting activities	4	0.06
Public Admin. & Defense: compulsory social security	3	0.04
Unknown	186	2.63
Total	7,073	100.00

It is of further interest to note that approximately 17% of the reported events (Table V) and a similar percentage of the facilities in these events (Table VI) involve facilities which are traded on Korea Stock Exchange (KSE) whose headquarters are located in Seoul. The percentage of events involving traded facilities appears however to have declined over the period of observations from approximately 18% in the early 1990s (even reaching 19.4% in 1993) to approximately 13% in 2001. A similar trend emerges in Table VI which examines the number of traded facilities involved in those events as a percentage of the total number of facilities. This may be indicative of a broader penetration of the violation lists, gradually featuring a larger number of less prominent and smaller facilities.

TABLE V

NUMBER OF REPORTED EVENTS: TRADED VS. NON-TRADED FACILITIES

Year	# of events	Traded (#)	Traded (%)	Non-traded (#)	Non-traded (%)
1992	40	7	17.5	33	82.5
1993	888	172	19.4	716	80.6
1994	654	104	15.9	550	84.1
1995	533	100	18.8	433	81.2
1996	895	152	17.0	743	83.0
1997	838	156	18.6	682	81.4
1998	681	87	12.8	594	87.2
1999	779	139	17.8	640	82.2
2000	805	134	16.6	671	83.4
2001	755	111	14.7	644	85.3
2002	205	27	13.2	178	86.8
Total	7,073	1,189	16.8	5,884	83.2

TABLE VI

NUMBER OF TRADED VS. NON-TRADED FACILITIES

Year	# of facilities	Traded (#)	Traded (%)	Non-traded (#)	Non-traded (%)
1992	40	7	17.5	33	82.5
1993	876	168	19.2	708	80.8
1994	646	102	15.8	544	84.2
1995	529	98	18.5	431	81.5
1996	888	148	16.7	740	83.3
1997	824	150	18.2	674	81.8
1998	675	86	12.7	589	87.3
1999	767	131	17.1	636	82.9
2000	795	132	16.6	663	83.4
2001	733	107	14.6	626	85.4
2002	203	26	12.8	177	87.2
Total	6,976 [1]	1,155	16.6	5,821	83.4

[1]Note: The number of facilities here is larger than 3,455 since a number of facilities may appear more than once over the period of observation.

C. *Location*

In terms of location, the surrounding area of the capital city, Gyeonggi Province represents the largest number of events (27%) appearing on the monthly violation lists (Table VII). This may be explained simply by noting that Gyeonggi Province is known to be the most industrialized provinces of Korea. Of the 106,550 total number of

manufacturing firms in 2001 in Korea (with 5 employees or more), 31,409 (or 29.5%) are located in Gyeonggi Province. Moreover, industrial wastewater discharges in Korea has been estimated to be 1,156,396 m^3 per day, with Gyeonggi Province accounting for 28.7% of this total (327,955 m^3 per day) (Ministry of Environment, 2001). Firms in Gyeonggi province do not therefore appear to be more seriously targeted than what their overall importance in the manufacturing sector would indicate.

Over the period of observation, note that the number of violation events has fallen by approximately 50% in Deagu City and Gyeongsangnam Province. In Seoul, the number of violation appearing on the monthly violation lists fell from 28 to 3. On the other hand, violation events increased more than 2-fold in Gyeonggi Province, and Incheon City.

TABLE VII
NUMBER OF REPORTED EVENTS PER LOCATION

Location	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Total
Busan[1]	5	49	33	34	45	33	20	20	26	35	9	309
Chungcheongbuk[2]	0	41	33	32	45	23	24	26	22	24	9	279
Chungcheognnam[2]	3	33	32	35	24	41	23	26	38	36	16	307
Daegu[1]	1	236	101	45	77	118	108	100	90	90	15	981
Daejeon[1]	5	20	25	12	20	19	21	27	11	13	1	174
Gangwon[2]	2	25	20	39	32	27	21	28	30	23	8	255
Gwangju[1]	0	4	5	4	4	6	5	3	6	4	4	45
Gyeonggi[2]	10	117	96	120	298	270	193	246	259	268	63	1,940
Gyeongsangbuk[2]	1	42	55	23	42	38	88	57	74	69	19	508
Gyeongsangnam[2]	4	98	61	50	103	72	40	71	52	40	5	596
Incheon[1]	1	27	22	20	50	64	39	56	69	59	27	434
Jeju[2]	0	5	1	5	6	2	6	8	2	2		37
Jeollabuk[2]	1	55	55	42	59	32	25	37	42	28	4	380
Jeollanam[2]	3	46	39	23	43	31	13	20	14	27	5	264
Jeonju[1]	0	0	0	0	0	1	0	0	0	0	0	1
Seoul[1]	1	28	34	14	18	12	14	11	4	3	2	141
Suwon[1]	0	0	0	0	0	2	0	0	0	0	0	2
Ulsan[1]	3	62	42	35	29	47	47	45	60	34	16	420
Total	40	888	654	533	895	838	687	781	799	755	203	7,073

1 = City; 2 = Province

D. *Nature of violations and government actions*

As indicated in Table VIII, approximately 60% of the violations reported in the monthly violation lists pertain to the violation of Korean emission standards. The second largest type of violation (18.0%) is the failure of pollution abatement equipment to operate effectively.

TABLE VIII
NATURE OF VIOLATION

Nature of violation	Total	%
Violation of emissions standards	4,301	60.8
Failure of pollution abatement equipment	1,273	18.0
Failure to report	377	5.3
Failure of monitoring system	274	3.9
Failure of environmental manager	253	3.6
Violation of technical standards on inputs	67	0.9
Illegal waste discharges	54	0.8
Violation of government order	46	0.7
Other violation	428	6.1
Total	7,073	100.0

When the nature of violation is examined among traded and non-traded facilities, there does not appear to be significant differences between these two groups of facilities. For example, as shown in Table IX, while the violation of emissions standards represent 60.8% of the total number of violations, this same type of violation represents 57.6% of all violations involving publicly traded facilities, and 61.5% of all violations involving non-traded facilities.

TABLE IX
NATURE OF VIOLATION: TRADED VS. NON-TRADED FACILITIES

Nature of violation	% of total number	Traded	% of traded	Non-traded	% of Non-traded
Violation of emissions standards	60.8	685	57.6	3,616	61.5
Failure of pollution abatement equipment	18.0	262	22.0	1,012	17.2
Failure to report	5.3	53	4.4	324	5.5
Failure of monitoring system	3.9	41	3.4	233	4.0
Managerial failure[1]	3.6	53	4.4	200	3.4
Violation of technical standards on inputs	0.9	13	1.1	54	0.9
Illegal waste discharges	0.8	7	0.6	47	0.8
Violation of government order	0.7	6	0.5	41	0.7
Other violation	6.1	73	6.1	356	6.0
Total	100.0	1190	100.0	5,883	100.0

[1] In most circumstances, this involves the failure to employ an environmental manager.

Insofar as government actions are concerned, the largest number (61%) are government orders, followed by warnings and prosecutions (Table X). Orders include orders to change equipment, and to appoint personnel to environmental management. Once again, there does not appear to be significant differences in terms of government actions between traded and non-traded facilities (Table XI).

TABLE X
GOVERNMENT ACTIONS

Government actions	Total	%
Order	4,318	61.3
Warning	807	11.4
Prosecution	696	9.9
Penalty	500	7.1
Temporary shutdown	301	4.3
Shutdown	223	3.2
Ban to use specific equipment	196	2.8
Other	5	0.1
Total	7,046	100.0

TABLE XI
NATURE OF VIOLATION: TRADED VS. NON-TRADED FACILITIES

Nature of violation	% of total number	Traded	% of traded	Non-traded	% of Non-traded
Order	61.3	720	60.6	3,598	61.4
Warning	11.4	149	12.5	658	11.2
Prosecution	9.9	119	10.0	577	9.9
Penalty	7.1	102	8.6	399	6.8
Temporary shutdown	4.3	33	2.8	268	4.6
Shutdown	3.2	27	2.2	196	3.4
Ban to use specific equipment	2.8	39	3.3	157	2.7
Other	0.1	0	0.0	5	0.1
Total	100.0	1,188	100.0	5,858	100.0

While a large number of facilities have been subjected to only 1 government action, an even larger number of facilities have received more than one government action over the period 1992-2002 (Table XII). For example, 145 facilities have been subjected to 5 to 10 government actions; 13 facilities have received more than 20 government actions; Busung Paper company has received the largest number of government actions with a total of 84. Publicly traded companies have appeared more than once on the lists for 51.5% of the time, while non-traded companies have appeared more than once only 47.7% of the time.

TABLE XII
DISTRIBUTION OF THE NUMBER OF GOVERNMENT ACTIONS PER FACILITY

Number of government actions	Number of facilities	%	Traded	%	Non-traded	%
1	674	52.3	86	48.5	588	52.3
2	255	19.8	46	26.0	209	18.8
3	124	9.6	20	11.3	104	9.4
4	50	3.9	8	4.5	42	2.8
5	46	3.6	4	2.3	42	3.8
6	31	2.4	0	0	31	2.8
7	26	2.0	5	2.8	21	1.9
8	24	1.9	3	1.7	21	1.9
9	10	0.8	2	1.1	8	0.7
10	8	0.6	1	0.5	7	0.6
11	7	0.5	0	0	7	0.6
12	7	0.5	0	0	7	0.6
13	3	0.2	0	0	3	0.3
14	3	0.2	1	0.5	2	0.2
15	2	0.2	0	0	2	0.2
16	0	0.0	0	0	0	0
17	2	0.2	1	0.5	1	0.09
18	0	0.0	0	0	0	0
19	1	0.1	0	0	1	0.09
20	2	0.2	0	0	2	0.1
> 20	13	1.0	0	0	13	1.2

E. *The role of the news media*[6]

Since 1990, the Korea Press Foundation has operated a comprehensive online news database service known as KINDS (Korean Integrated News Database System). This system is the largest service of this nature in Korea. It covers national and economic daily newspapers in both Korean and English, news bulletins, local daily newspapers, magazines, and foreign newspapers. It provides the complete text of 10 major national daily newspapers.[7] On-line users can further search articles in 23 local daily newspapers

[6] For a similar analysis of environmental news published in newspapers in Argentina, Chile, Mexico, and the Philippines, see Dasgupta, Meisner and Laplante (2000).
[7] The Kyunghyang Shinmun, the Kukmin Daily, the Korea Daily News, the Dong-A Ilbo, The Numhwa Ilbo, the Segye Ilbo, the Chosun Ilbo, the Joongang Ilbo, the Hankyoreh, and the Hankook Ilbo.

in Korea. Since it inception, it has cumulated a total of over 3 million articles, and continues to add to its database approximately 2,000 articles each and every day.

The KINDS database was searched by entering keywords such as environment, violation, and accident, searching for articles related to environmental news.

Over the period of observation, approximately 11% of the total number of violation events that have appeared on the monthly violation lists have been covered by printed news media (Table XIII). However, this number appears to have declined over time from a range of 17 to 18% in 1993 and 1994 to 11% in 2001. This percentage even reached 3% in 2000. This may indicate that the 'novel' feature of the lists may have lost some of its appeal over time.

TABLE XIII
NUMBER OF VIOLATION EVENTS REPORTED IN THE NEWS MEDIA

Year	Reported in the news		Total	% of Yes
	Yes	No		
1992 (Dec.)	14	26	40	35.0
1993	153	735	888	17.2
1994	120	534	654	18.3
1995	67	466	533	12.6
1996	105	790	895	11.7
1997	73	765	838	8.7
1998	34	647	681	5.0
1999	72	707	779	9.2
2000	24	781	805	3.0
2001	83	672	755	11.0
2002 (Jan.-Apr.)	11	194	205	5.4
Total	756	6,317	7,073	10.7

Insofar as the role of the media is concerned, it is of interest to examine the nature of the violation events covered by the news and to compare these with the overall population of events. In Table XIV, note that of the 756 events covered in the printed news media, 40% of them involved traded companies, while it may be recalled (Table IV) that traded companies represent only 16% of the total number of violation events. It

would thus appear that the news media pays particular attention to traded companies (which may also be larger, and more prominent companies) in their news coverage.

TABLE XIV
MEDIA COVERAGE: TRADED VS. NON-TRADED

In news	Total	Traded	% traded	Non-traded	% non-traded
No	6,317	887	14 %	5,430	86 %
Yes	756	303	40 %	453	60 %

This greater interest in traded companies is also revealed by examining the number of newspapers in Korea that have given coverage to a specific violation event. In Table XV, note that 39.3% of the events involving traded companies have been covered by more than 1 newspaper, while only 24.1% of the events involving non-traded companies have been covered in more than one newspaper.

TABLE XV
FREQUENCY OF NEWS COVERAGE: TRADED VS. NON-TRADED

Number of newspapers that have covered the event	Total	Traded	% traded	Non-traded	% non-traded
1	531	187	61.7	344	75.9
2	137	64	21.1	73	16.1
3	52	28	9.2	24	5.3
4	21	15	5.0	6	1.3
5	8	6	2.0	2	0.4
6	4	2	0.7	2	0.4
7	1		0.0	1	0.2
8	2	1	0.3	1	0.2
Total	756	303	100.0	453	100.0

Newspapers appear to be particularly interested by violations pertaining to the failure of pollution abatement equipment (Table XVI). While this type of violation represents only 18.0% of the total number of events, it represents more than 25% of the events covered by newspapers. On the other hand, while the failure to report and failure

of the monitoring system represent 9.2% of the total number of violations, these two types of violation represent only 5.5% of the events covered by the newspapers.

TABLE XVI
NEWS COVERAGE PER TYPE OF VIOLATION

Nature of violation	% of events covered in news	% of total events
Violation of emissions standards	53.9	60.8
Failure of pollution abatement equipment	25.1	18.0
Failure to report	3.4	5.3
Failure of monitoring system	2.1	3.9
Failure of environmental manager	1.9	3.6
Violation of technical standards on inputs	0.5	0.9
Illegal waste discharges	1.2	0.8
Violation of government order	0.6	0.7
Other violation	11.2	6.1
Total	100.0	100.0

Finally, we may examine the nature of government actions that appear to be of particular interest to newspapers (Table XVII). Orders and warnings appear to receive less interest from the newspapers than their weight as a percentage of the total number of violation events. However, while prosecutions represent only 9.9% of the total violation events, they represent almost 16% of the violation events reported in the newspapers. Similarly, shutdowns (temporary or complete) and bans are more widely covered in the newspapers (7.5% of all events in the newspapers) than their overall importance in the monthly violation lists (11.8% of all violation events).

TABLE XVII
NEWS COVERAGE PER TYPE OF GOVERNMENT ACTION

Government actions	% of events covered in news	% of total events
Order	53.9	61.3
Warning	8.1	11.4
Prosecution	15.8	9.9
Penalty	4.2	7.1
Temporary shutdown	5.8	4.3
Shutdown	6.0	3.2
Ban to use specific equipment	6.0	2.8
Other	0.1	0.1
Total	100.0	100.0

IV. CONCLUSION

The Government of Korea has developed a long experience with the systematic public disclosure of information pertaining to firms' environmental performance, perhaps the longest of all such disclosure programs currently in existence. Over the period 1993 - 2001, thousands of violation events have been reported, involving thousands of both publicly traded and non-traded companies. The news media has given an important, though perhaps declining coverage to the violation lists, with a focus on publicly traded companies, failures to operate pollution abatement equipment, and prosecutions.

Up to now, there has not been detailed analyses of the potential impact of Korean's MVR. Numerous questions emerge, including: Did investors react to such environmental news by pulling resources away from companies involved in such news? Did companies improve their environmental performance following the public disclosure of their violation of environmental laws? These, among others, are subject to on-going research.

REFERENCES

Dasgupta, Susmita, Craig Meisner, and Benoit Laplante. 2000. "Environmental News in Argentina, Chile, Mexico, and the Philippines" *Local Environment* 5 no. 3: 351-359.

Foulon, Jerome, Paul Lanoie, and Benoit Laplante. 2002. "Incentives for Pollution Control: Regulation or Information?" *Journal of Environmental Economics and Management* 44: 169-187.

Lanoie, Paul, Benoit Laplante, and Maite Roy. 1998. "Can Capital Markets Create Incentives for Pollution Control?" *Ecological Economics* 26: 31- 41.

Ministry of Environment. 2002. *White Paper on Environment 2002*. Seoul: Ministry of Environment.

Ministry of Environment. 2001. *Annual Statistics on Environment 2001*. Seoul: Ministry of Environment.

Song, Byung-Nak. 1997. *The Rise of the Korean Economy*, 2nd edition. Hong Kong: Oxford University Press.

World Bank. 2000. *Greening Industry: New Roles for Communities, Markets, and Governments*. Washington, D.C.: World Bank and Oxford University Press.

Policy Research Working Paper Series

	Title	Author	Date	Contact for paper
WPS3101	Portfolio Preferences of Foreign Institutional Investors	Reena Aggarwal Leora Klapper Peter D. Wysocki	July 2003	A. Yaptenco 31823
WPS3102	Investing in Infrastructure: What is Needed from 2000 to 2010?	Marianne Fay Tito Yepes	July 2003	M. Fay 87200
WPS3103	Ownership Structure and Initial Public Offerings	Reena Aggarwal Leora Klapper	July 2003	A. Yaptenco 31823
WPS3104	Does Strict Employment Protection Discourage Job Creation? Evidence from Croatia	Jan Rutkowski	August 2003	J. Rutkowski 84569
WPS3105	Further Evidence on the Link between Finance and Growth: An International Analysis of Community Banking and Economic Performance	Allen N. Berger Iftekhar Hasan Leora F. Klapper	August 2003	A, Yaptenco 31823
WPS3106	Governance Matters III: Governance Indicators for 1996–2002	Daniel Kaufmann Aart Kraay Massimo Mastruzzi	August 2003	A. Bonfield 31248
WPS3107	More Favorable and Differential Treatment of Developing Countries: Toward a New Approach in the World Trade Organization	Bernard Hoekman Constantine Michalopoulos L. Alan Winters	August 2003	P. Flewitt 32724
WPS3108	Stabilization and Association Process in the Balkans: Integration Options and their Assessment	Bartlomiej Kaminski Manuel de la Rocha	August 2003	F. Sy 89750
WPS3109	The Impact of China's WTO Accession on East Asia	Elena Ianchovichina Terri Walmsley	August 2003	S. Lipscomb 87266
WPS3110	Governance of Public Pension Funds: Lessons from Corporate Governance and International Evidence	David Hess Gregorio Impavido	August 2003	P. Braxton 32720
WPS3111	International Trade and Wage Discrimination: Evidence from East Asia	Günseli Berik Yana van der Meulen Rodgers Joseph E. Zveglich, Jr.	August 2003	M. Ponglumjeak 31060
WPS3112	On the Timing of Marriage, Cattle, and Weather Shocks in Rural Zimbabwe	Johannes Hoogeveen Bas van der Klaauw Gijsbert van Lomwel	August 2003	P. Sader 33902
WPS3113	What Drives Bank Competition? Some International Evidence	Stijn Claessens Luc leaven	August 2003	R. Vo 33722
WPS3114	The Dynamics of Foreign Bank Ownership: Evidence from Hungary	Giovanni Majnoni Rashmi Shankar Éva Várhegyi	August 2003	H. Issa 30154
WPS3115	Integrating Housing Wealth into the Social Safety Net: The Elderly in Moscow	Robert Buckley Kim Cartwright Raymond Struyk Edward Szymanoski	August 2003	O. Himid 80225

Policy Research Working Paper Series

	Title	Author	Date	Contact for paper
WPS3116	Dollarization of the Banking System: Good or Bad?	Gianni De Nicoló Patrick Honohan Alain Ize	August 2003	A. Yaptenco 38526
WPS3117	Policy Research on Migration and Development	David Ellerman	August 2003	B. Mekuria 82756
WPS3118	To Share or Not to Share: Does Local Participation Matter for Spillovers from Foreign Direct Investment?	Beata Smarzynska Javorcik Mariana Spatareanu	August 2003	P. Flewitt 32724
WPS3119	Evaluating the Impact of Conditional Cash Transfer Programs: Lessons from Latin America	Laura B. Rawlings Gloria M. Rubio	August 2003	M. Colchao 38048
WPS3120	Land Rights and Economic Development: Evidence from Vietnam	Quy-Toan Do Lakshmi Iyer	August 2003	P. Sader 33902
WPS3121	Do Bilateral Investment Treaties Attract Foreign Direct Investment? Only a Bit ... and They Could Bite	Mary Hallward-Driemeier	August 2003	A. Bonfield 31248
WPS3122	Individual Attitudes Toward Corruption: Do Social Effects Matter?	Roberta Gatti Stefano Paternostro Jamele Rigolini	August 2003	N. Obias 31986
WPS3123	Production and Cost Functions and Their Application to the Port Sector: A Literature Survey	Beatriz Tovar Sergio Jara-Díaz Lourdes Trujillo	August 2003	G. Chenet-Smith 36370
WPS3124	The Impact of Structural Reforms on Poverty: A Simple Methodology with Extensions	Neil McCulloch	August 2003	M. Faltas 82323
WPS3125	Economic Analysis of Health Care Utilization and Perceived Illness: Ethnicity and Other Factors	Vicente B. Paqueo Christian Y. Gonzalez	August 2003	R. Guzman 32993